

Edexcel GCE

Core Mathematics C1

Advanced Subsidiary

Indices and Surds

Materials required for examination

Mathematical Formulae (Pink or Green)

Items included with question papers

Nil

Calculators may NOT be used in this examination.

Advice to Candidates

You must ensure that your answers to parts of questions are clearly labelled.
You must show sufficient working to make your methods clear to the Examiner.
Answers without working may not gain full credit.

1. Simplify

(a) $(3\sqrt{7})^2$ (1)

(b) $(8 + \sqrt{5})(2 - \sqrt{5})$ (3)

2. Given that $32\sqrt{2} = 2^a$, find the value of a .

3. (a) Write down the value of $125^{\frac{1}{3}}$. (1)

(b) Find the value of $125^{-\frac{2}{3}}$. (2)

4. Expand and simplify $(\sqrt{7} + 2)(\sqrt{7} - 2)$.

5. (a) Write down the value of $16^{\frac{1}{4}}$. (1)

(b) Simplify $(16x^{12})^{\frac{3}{4}}$. (2)

6. Simplify

$$\frac{5 - \sqrt{3}}{2 + \sqrt{3}},$$

giving your answer in the form $a + b\sqrt{3}$, where a and b are integers. (4)

7. (a) Find the value of $8^{\frac{4}{3}}$. (2)

(b) Simplify $\frac{15x^{\frac{4}{3}}}{3x}$. (2)

8. (a) Express $\sqrt{108}$ in the form $a\sqrt{3}$, where a is an integer. (1)

(b) Express $(2 - \sqrt{3})^2$ in the form $b + c\sqrt{3}$, where b and c are integers to be found. (3)

9. (a) Write $\sqrt{45}$ in the form $a\sqrt{5}$, where a is an integer. (1)
- (b) Express $\frac{2(3 + \sqrt{5})}{(3 - \sqrt{5})}$ in the form $b + c\sqrt{5}$, where b and c are integers. (5)
10. (a) Write down the value of $8^{\frac{1}{3}}$. (1)
- (b) Find the value of $8^{-\frac{2}{3}}$.
11. (a) Expand and simplify $(4 + \sqrt{3})(4 - \sqrt{3})$. (2)
- (b) Express $\frac{26}{4 + \sqrt{3}}$ in the form $a + b\sqrt{3}$, where a and b are integers. (2)
12. (a) Write down the value of $16^{\frac{1}{2}}$. (1)
- (b) Find the value of $16^{-\frac{3}{2}}$. (2)